Deconfined quantum criticality in bipartite SU(N) antiferromagnets in two dimensions\textsuperscript{1} MATTHEW S. BLOCK, RIBHU K. KAUL, Department of Physics & Astronomy, University of Kentucky — The theory of deconfined quantum criticality shatters the celebrated paradigm of the Landau-Ginzburg-Wilson description of phase transitions by allowing for direct, continuous, quantum phase transitions between conventional, ordered phases that spontaneously break fundamentally different symmetries of the system. In this talk, I will present new results of a quantum Monte Carlo study of a local, SU(N) symmetric, antiferromagnetic spin model on the honeycomb and anisotropic rectangular lattices. In particular, I will show evidence for the existence of a continuous phase transition separating conventional Néel and valence bond solid ordered phases, as well as comparisons of the extracted critical exponents for sufficiently large values of \(N\) to those calculated analytically via a \(1/N\) expansion solution of the CP\(^{N-1}\) gauge field theory that is believed to accurately describe the behavior at the critical point. In combination with previous results of a similar study on the square lattice, this allows for a robust understanding of how the existence of deconfined quantum criticality depends on the lattice symmetries as a function of \(N\), and therefore gives a complete picture of the phenomenon in bipartite SU(N) systems in two dimensions.

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